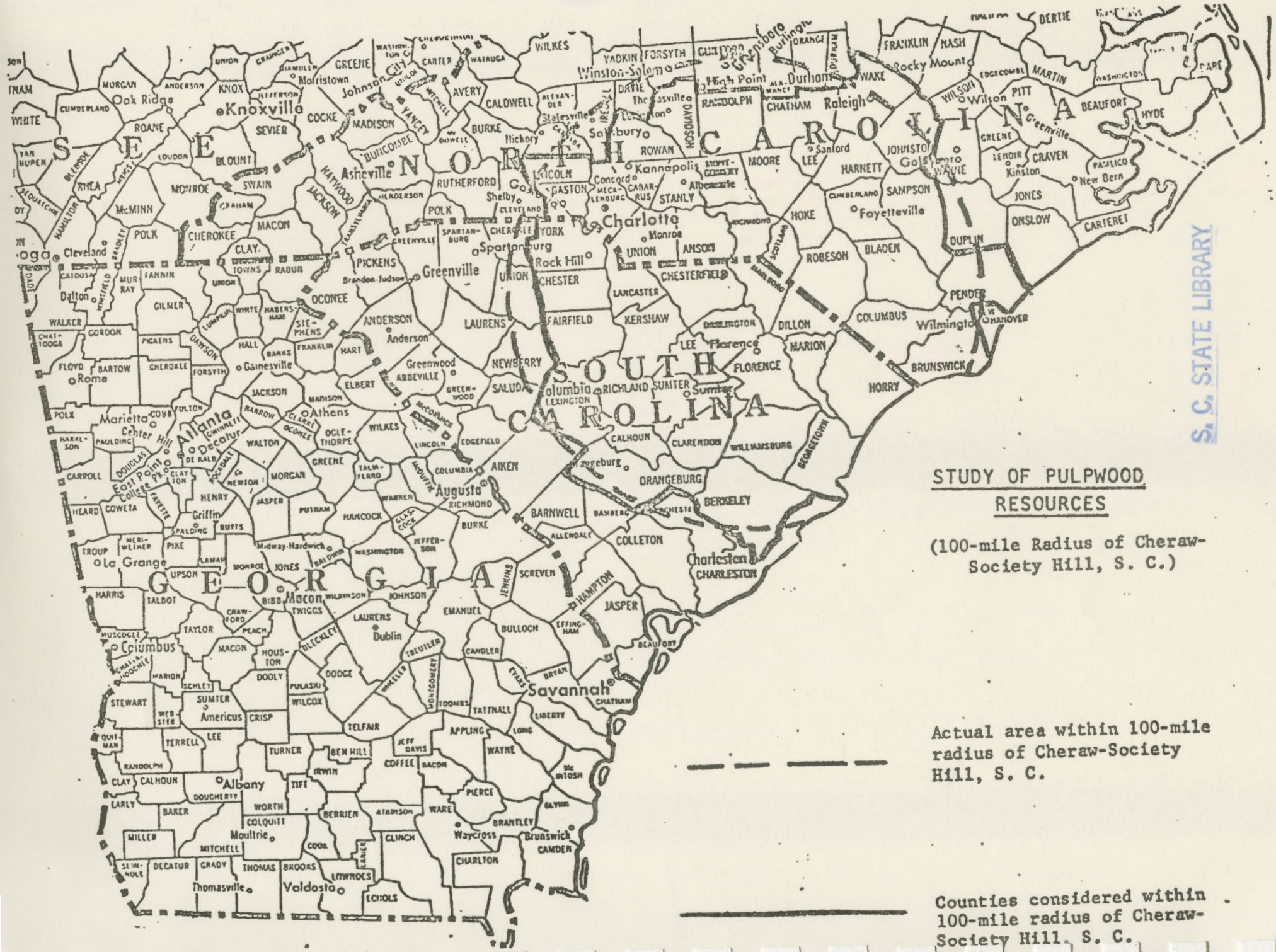
STUDY OF PULPWOOD RESOURCES

WITHIN 100 MILE RADIUS

OF

CHERAW - SOCIETY HILL, S. C.

The S. C. State Commission of Forestry, at the request of the State Development Board, made a study of the pulpwood resources within a 100-mile radius of Cheraw-Society Hill, S. C. The study was done in 1970 and updated in 1974. This information was compiled by Charles C. Rountree, Jr., Forest Management Assistant, L. Hodge Harmon, Forester-Utilization, and Peter S. Bischoff, Forester-Planner.


STUDY OF PULPWOOD RESOURCES
(100-mile Radius of Cheraw-Society Hill, S. C.)
Actual area within 100-mile radius of Cheraw-Society Hill, S. C.
Counties considered within 100-mile radius of Cheraw-Society Hill, S. C.
S. C. STATE LIBRARY
SOUTH CAROLINA
NORTH CAROLINA
GEORGIA
TENNESSEE
Charlotte
Greenville
Spartanburg
Columbia
Augusta
Atlanta
Macon
Savannah
Charleston
Asheville
Knoxville
Raleigh
Durham
Greensboro
Winston-Salem
Florence
Albany
Columbus

STUDY OF PULPWOOD RESOURCES WITHIN 100-MILE RADIUS OF CHERAW-SOCIETY HILL, SOUTH CAROLINA

Purpose of Study

The purpose of this study is to determine if sufficient pulpwood is available at present and in the future to support a pulp mill proposed to be located in the area encompassed by this study.

Area Included in Study

The area included in the study is within a 100-mile radius of the proposed sites. It includes all or a large part of 22 counties in South Carolina and 27 counties in North Carolina (reference to map). The total area within these 49 counties is 20,554,400 acres, of which 9,862,300 acres are in South Carolina and 10,692,100 acres are in North Carolina.

Physiographically, the area in both states embraces portions of the Coastal Plain, the Sandhills, and the lower and middle Piedmont.

Commercial Forest Land

The total area of commercial forest land included in this study embraces 12,919,900 acres, of which 6,276,300 are in South Carolina and 6,643,600 acres are in North Carolina. In both states, the area of commercial forest land is approximately 63% of the total land area. (See Table 1.)

Forest Types

Major forest types in both states include the yellow pine types - loblolly predominately, longleaf, shortleaf, pond and Virginia pine;

hardwood pine; oak, hickory and swamp and bottomland hardwoods. For South Carolina as a whole, the percent of land area occupied by these types is roughly 45% for softwoods, 17% for oak-pine, 21% for oak-hickory, and 17% for swamp and bottomland hardwoods. For North Carolina as a whole, the percent of land area occupied by these types is roughly 36% for softwoods, 18% for oak-pine, 30% for oak-hickory, and 16% for swamp and bottomland hardwoods.

Forest Land Ownership

Of the 12,919,900 acres of commercial forest land included in this study, 10,282,600, or approximately 79%, is in other private ownership; 753,600 acres, or 6% is in public ownership; and 1,891,700, or 15%, is in forest industry ownership. (See Table 1.)

Since industry information for several North Carolina counties is not available, the total industry acreage is low.

For South Carolina:

The ownership of the commercial forest area in this study is estimated to be approximately 7% in public ownership, 19% in forest industry ownership, and 74% in other private ownership.

The larger public holdings are held in the national forests in Berkeley, Chester and Fairfield Counties; the Sandhills National Wildlife Refuge and State Forest in Chesterfield County; the Manchester State Forest in Sumter County; Fort Jackson in Richland County; the Santee-Cooper lakes (Public Service Authority) in Berkeley, Orangeburg, Clarendon and Sumter Counties; the national and state parks; air bases, etc.

For North Carolina:

The ownership of commercial forest land included in this study is estimated to be approximately 5% in public ownership, 10% in forest industry, and 85% in other private ownership. Since industry information for several North Carolina counties is not available the forest industry percent figure is low.

The larger public holdings are held in: the national forests in Randolph and Montgomery Counties; by the military in Brunswick, Cumberland, Hoke, Moore and Scotland Counties; state forests in Bladen County; State Wildlife Refuge in Pender and Richmond Counties; several state parks, etc.

Timber Inventory

From the South Carolina Survey of 1968, and the North Carolina Surveys of 1966 and 1974, there was in the 49-county area included in this study, a timber inventory of growing stock of 5" and up of 167,772,000 cords. This includes 78,744,000 cords of pine. (Table No. 2.)

Growth and Cut figures indicate an excess growth over cut of 996,000 cords of softwood and 1,114,000 cords of hardwoods. (Table No. 3.)

More intensive efforts for the protection of the forest resources from fire, insects and disease are constantly being made. More detail is given elsewhere in this study on the commendable progress made in fire protection, and intensive action in the detection and control of forest pests.

The use of prescribed burning for hazard reduction, undesirable hardwood control, site preparation for reproduction, and brown spot control in longleaf pine is increasing considerably, which practices are aimed at increasing and protecting pine growth.

Woodland management practices have increased considerably in the past 20 years. The most intensive management practices are to be found on industry holdings, the national and state forests, and the larger other private holdings. The combined efforts of public, consulting and industry foresters are constantly being increased to give the small private owner, who owns and controls the largest acreage of woodlands, assistance to improve management and harvesting practices on their holdings.

Insect and Disease Mortality

While losses from insects and diseases are serious and costly, they are not a major threat to timber management and the overall forest economy. Damage or kill to softwoods is often salvageable, but with hardwoods, it is more serious due to reduction in quality and eventual mortality. The most serious threat to pine in recent years has been the periodic outbreaks of the southern pine beetle which have reached epidemic proportions in a number of counties throughout the Piedmont section of North and South Carolina. These outbreaks have usually lasted about two years before the beetle population reduced to endemic levels. Scattered losses have also been realized from infestations of the other pine bark beetles. Light to heavy losses occur in the Piedmont from littleleaf disease in shortleaf pine; in the Coastal Plain from annosus root rot in thinned slash pine stands and fusiform gall rust in slash and loblolly pine. An ice storm in February 1969 damaged or destroyed nearly three million cords of timber in the Sandhills section of North and South Carolina. An intensive salvage program recovered a high percentage of the heavily damaged operable stands. Insect activity in trees damaged by the ice storm

does not appear to be a threat. As expressed in South Carolina Survey Release No. 55, "It must be recognized that the mortality of timber each year is a substantial part of the gross annual growth, and that the threat of abnormal mortality by fire, insects, disease, wind and ice is always present and must be reckoned with in evaluating the growth outlook. Much of the mortality can be anticipated and should be utilized before death. The salvage of dying and recently killed timber could add several hundred thousand cords to 'the annual net growth'." Accessibility to most timber stands in both states, together with good transportation facilities, permit ability to salvage losses in all seasons of the year.

Reforestation

North Carolina commenced its reforestation program in 1927 and South Carolina in 1929. Since these dates, and through calendar year 1969 in North Carolina and calendar year 1972 in South Carolina, a total of 1,214,585 acres has been planted in the counties included in this study. (See Table 4.) The first great impetus in planting occurred during the Emergency Conservation Works Program, 1934-42; a continuous increase in planting followed World War II; and another reforestation boom occurred during the Soil Bank Program in the late 50's. Over 98% of these plantings were pine, principally loblolly, slash and longleaf, and to a lesser extent shortleaf, white and Virginia pine. Many of these plantings have already reached sawtimber size, and have been thinned one or more times. With the termination of the Soil Bank Program, at which time the greater part of the idle and abandoned land formerly in agricultural use was planted, the planting program in both states has leveled

off to a total of about 80,000 acres annually. In addition to the reforestation of idle and abandoned crop and pasture lands, many thousands of acres of low quality hardwood lands, understocked and unproductive areas have been converted to pine in the past 20 years. Both states are actively pursuing a tree improvement program; within the next three years both states should be producing their total crop of pine seedlings from genetically selected parent trees. State nurseries are already growing seedlings for industry planting from seed furnished by the industry from their own seed orchards.

Fire Protection Progress in Area

Protection from wild fires has made commendable progress in both states. Fire occurrence has been substantially reduced through education, publicity, law enforcement and greater appreciation of the forest resources by the private landowner and the public. Similarly, area burned has been more greatly reduced by reason of better techniques and know-how, aerial detection and ground support, radio communications, mechanized equipment, access roads, etc.

For South Carolina (22-county area) the average percent area burned for the past five years (1969-73) was 0.27.

For North Carolina (27-county area) the average percent area burned for the five-year period 1965-69 was 0.65.

This North Carolina record included two years of adverse weather causing extreme fire conditions resulting in large acreage burned.

Pulpwood Harvested - Wood Residue

In the area included in this study, the average annual cut of pulpwood for the past five years (1968-72) was 2,412,690 standard cords, of which 1,392,139 cords were harvested in the South Carolina counties, and 1,020,551 cords in the North Carolina counties (see Table 6.) An abnormal amount of wood was taken from this area in 1969 due to a salvage operation resulting from a severe ice storm. More than 200,000 cords were salvaged out of this area which will result in a small reduction in the present growing stock. A storm of this magnitude had never been experienced before and therefore should not affect future planning greatly for this area. At present there are eleven mills drawing on the area.

In addition to round pulpwood consumption, the volume of wood residues for pulping in 1972 was 926,300 cord equivalents for the whole of South Carolina, and 1,074,600 cord equivalents for North Carolina, which was a 68% increase in volume of the residues used four years ago.

Stumpage Prices for Pulpwood

In South Carolina, stumpage prices paid for pine pulpwood, during the last half of 1973, ranged from $6.50 to $9 per standard cord in the Coastal Plain counties, from $6 to $9 in the Piedmont, and from $8 to $10 per standard cord in the Sandhills counties. Prices paid for soft hardwoods were considerably less than for pine, ranging from $2.50 to $4 per standard cord. Pulpwood sales for North Carolina counties were not checked. It is safe to assume that similar prices prevail in the North Carolina area included in this study.

Pulpwood Procurement

There is a well established system of pulpwood dealers and producers covering all parts of the two states included in this report. In South Carolina, for example, there are some 175 to 200 dealers and buyers operating in the state, averaging three or more for every county in the state. There should be no difficulty for a new company to make contact with existing dealers and buyers to supply pulpwood needs; furthermore, new dealerships could be readily established as pulpwood needs increase.

TABLE 1

Total Land Area, Commercial Forest Area, and Ownership of Commercial Forest Land by Counties
Within 100-mile Radius of Location on Great Pee Dee River
Cheraw - Society Hill Area, S. C.
(In Thousand Acres)

County	Total Area	Forest Land		Ownership		
		Commercial	Percent	Public	Forest Industry	Private
Berkeley	701.6	578.5	82.4	178.0	165.5	235.0
Calhoun	241.3	134.1	55.5	1.2	4.0	128.9
Chester	374.4	271.1	72.4	12.4	51.5	207.2
Chesterfield	507.5	322.5	63.5	84.3	21.3	216.9
Clarendon	382.7	214.2	55.9	4.9	42.8	166.5
Darlington	349.0	176.8	50.6	1.0	28.6	147.2
Dillon	260.5	135.6	52.0	0.5	27.2	107.9
Fairfield	447.4	386.3	86.3	12.2	76.2	297.9
Florence	515.2	274.9	53.3	0.3	37.1	237.5
Georgetown	520.3	388.8	74.7	0.4	235.2	153.2
Horry	737.3	486.1	65.9	4.1	129.9	352.1
Kershaw	503.1	381.1	75.7	3.9	55.0	322.2
Lancaster	322.6	231.4	71.7	0.4	24.0	207.0
Lee	261.8	105.7	40.3	2.0	0.9	102.8
Lexington	453.1	264.6	58.3	0.9	5.1	258.6
Marion	312.3	210.1	67.2	--	84.9	125.2
Marlboro	308.5	158.1	51.2	0.2	45.6	112.3
Orangeburg	707.2	347.2	49.0	6.4	28.7	312.1
Richland	478.7	340.2	71.0	54.3	26.0	259.9
Sumter	441.0	225.7	51.1	44.0	28.6	153.1
Williamsburg	598.4	387.1	64.6	0.1	69.2	317.8
York	438.4	256.2	58.4	0.5	16.7	239.0
Total - S. C.	9,862.3	6,276.3	63.0	412.0	1,204.0	4,660.3
Anson	341.1	240.6	70.5	0.1	--	240.5
Bladen	565.8	433.6	76.6	35.8	52.8	345.0
Brunswick	548.4	430.9	78.5	8.9	221.3	200.7
Cabarrus	230.4	99.8	43.3	0.4	--	99.4
Chatham	452.5	343.6	75.9	1.8	--	341.8
Columbus	606.5	417.5	68.8	--	155.2	262.2
Cumberland	418.9	238.2	56.8	36.2	9.0	193.0
Davidson	349.8	179.0	51.2	1.2	--	177.8
Gaston	225.6	122.5	54.3	0.4	--	122.1
Harnett	385.8	212.1	54.9	--	15.0	197.1
Hoke	249.5	159.5	63.9	85.7	2.2	71.6
Johnston	509.7	263.1	51.6	0.6	2.9	259.6
Lee	163.8	111.9	68.3	--	6.8	105.1
Lincoln	194.2	94.1	48.5	0.1	--	94.0

(In Thousand Acres)

County	Total Area	Forest Land		Ownership		
		Commercial	Percent	Public	Forest Industry	Private
Mecklenburg	342.7	166.2	48.5	2.0	--	164.2
Montgomery	313.8	268.0	85.4	34.4	--	233.6
Moore	450.9	341.8	75.8	4.6	14.3	332.9
Pender	558.4	450.8	80.7	63.0	127.9	259.8
Randolph	512.6	315.0	61.5	8.8	--	306.2
Richmond	303.7	219.3	72.2	31.0	27.4	160.9
Robeson	607.8	297.4	48.9	--	11.2	286.2
Rowan	330.9	138.4	41.8	0.8	--	137.6
Sampson	604.8	358.6	59.2	--	36.4	322.1
Scotland	204.7	124.5	60.8	26.0	5.3	93.3
Stanly	255.3	107.4	42.1	--	--	107.4
Union	411.5	197.2	47.9	0.2	--	197.0
Wake	553.0	312.6	56.5	1.4	--	311.2
Total - N. C.	10,692.1	6,643.6	62.1	341.6	687.7	5,622.3
Grand Total S.C. & N.C.	20,554.4	12,919.9	62.8	753.6	1,891.7	10,282.6

Data for South Carolina from USDA Forest Service Resource Bulletins SE 9, SE 10, SE 13, 1968

Data for North Carolina from U. S. Forest Service Resource Bulletins SE 5, 1966 and SE 26, 1974

Note: Information on Ownership by Forest Industry by counties not available for all North Carolina Counties. Only part of the 1974 survey data for N. C. was available at this time. This report can be further updated when the other recent survey data becomes available.

Table 2
Volume of Growing Stock* by Counties & Species Group
100 Mile Radius of Location on Great Pee Dee River, Cheraw - Society Hill area
(In Thousand Cords)

County	All Species	Pine	Other Softwood	Soft Hardwood	Hard Hardwood
Berkeley	9,434	5,131	391	2,231	1,665
Calhoun	2,153	1,042	21	826	278
Chester	2,120	869	89	465	690
Chesterfield	2,763	1,507	3	753	513
Clarendon	4,174	1,089	313	1,729	1,016
Darlington	2,699	1,222	128	769	573
Dillon	2,214	783	93	940	396
Fairfield	3,342	2,408	45	455	450
Florence	5,099	2,501	293	1,488	795
Georgetown	7,024	3,313	340	2,151	1,201
Horry	7,487	2,902	425	2,944	1,188
Kershaw	3,414	1,762	36	1,090	538
Lancaster	1,833	929	31	303	571
Lee	899	276	---	468	160
Lexington	2,138	1,511	8	325	313
Marion	3,942	1,230	270	1,582	839
Marlboro	2,261	623	111	1,125	397
Orangeburg	5,285	1,650	380	2,093	1,138
Richland	4,492	1,771	75	1,666	993
Sumter	3,811	1,518	129	1,595	569
Williamsburg	5,795	2,518	153	1,430	1,700
York	1,893	591	36	650	610
Total - S. C.	84,187	37,146	3,370	27,078	16,593
Anson	2,351	1,400	7	383	561
Bladen	5,959	3,340	101	1,695	823
Brunswick	4,178	2,679	208	1,055	236
Cabarrus	945	290	45	171	439
Chatham	4,276	1,796	50	1,010	1,420
Columbus	6,054	2,620	271	2,260	903
Cumberland	3,313	2,181	64	638	430
Davidson	2,236	795	33	596	812
Gaston	1,378	691	2	335	350
Harnett	2,760	1,430	7	675	648
Hoke	1,732	1,184	19	407	122
Johnston	5,405	2,495	0	1,628	1,282
Lee	2,005	801	5	589	610
Lincoln	940	396	2	185	357
Mecklenburg	1,477	589	33	316	539
Montgomery	2,780	1,437	4	347	992
Moore	4,957	2,825	144	796	1,192
Pender	4,639	2,761	300	966	612
Randolph	3,478	1,331	45	539	1,563
Richmond	2,466	1,486	5	747	228
Robeson	5,346	1,729	252	2,766	599
Rowan	1,866	787	27	421	631

Table 2 Cont'd

County	All Species	Pine	Other Softwood	Soft Hardwood	Hard Hardwood
Sampson	4,652	2,432	126	1,296	798
Scotland	1,281	888	65	228	100
Stanly	1,345	684	7	152	502
Union	1,802	783	11	289	719
Wake	3,964	1,768	4	1,219	973
Total - N.C.	83,585	41,598	1,837	21,709	18,441
Total Study Area	167,772	78,744	5,207	48,787	35,034

Data for South Carolina from USDA Forest Service Resource Bulletins SE 9, SE 10, SE 12, 1968
Data for North Carolina from USDA Forest Service Resource Bulletin SE 5, 1966 and SE 26, 1974

Converting factor for each species group causes slight variation in totals for all species. Refer to conversion factors in the above publications.

*Growing Stock Volume includes all trees 5" DBH and larger, including sawtimber.

Table 3
Net Annual Growth and Cut of Growing Stock
Within 100 Mile Radius of Location on Great Pee Dee River
Cheraw - Society Hill Area, S. C.
(In Thousand Cords)

County	Softwood		Hardwood	
	Growth	Cut	Growth	Cut
Anson	119	132	36	26
Bladen	172	124	89	75
Brunswick	173	118	55	47
Cabarrus	31	42	23	44
Chatham	137	156	81	58
Columbus	186	152	100	57
Cumberland	114	62	53	26
Davidson	60	72	52	51
Gaston	34	46	26	9
Harnett	81	26	115	30
Hoke	46	68	22	28
Johnston	124	130	103	55
Lee	42	48	55	32
Lincoln	26	33	20	19
Mecklenburg	49	96	34	16
Montgomery	98	42	50	58
Moore	166	91	100	64
Pender	171	155	53	37
Randolph	80	125	79	63
Richmond	87	83	43	21
Robeson	88	115	112	43
Rowan	41	35	34	60
Sampson	135	125	77	43
Scotland	41	48	14	3
Stanly	31	62	19	11
Union	47	38	38	12
Wake	148	151	70	39
Total - N. C.	2,527	2,375	1,553	1,027
Berkeley	343	236	135	42
Calhoun	71	58	39	25
Chester	72	68	51	47
Chesterfield	124	41	56	52
Clarendon	95	65	93	95
Darlington	81	24	58	33
Dillon	49	62	56	26
Fairfield	209	155	42	30
Florence	147	125	78	46
Georgetown	227	177	114	58
Horry	231	145	154	62
Kershaw	184	160	72	60
Lancaster	95	73	47	11
Lee	24	12	28	41
Lexington	109	54	29	36
Marion	83	38	97	56
Marlboro	52	79	66	69

Table 3 Cont'd.

County	Softwood		Hardwood	
	Growth	Cut	Growth	Cut
Orangeburg	122	85	113	84
Richland	145	70	106	74
Sumter	108	45	64	69
Williamsburg	155	91	123	78
York	65	84	84	23
Total - S. C.	2,791	1,947	1,705	1,117
Total Study Area	5,318	4,322	3,258	2,144

Data for S. C. from USDA Forest Service Resource Bulletins, SE 9, SE 10, SE 12, 1968
Data for N. C. from USDA Forest Service Resource Bulletin SE 5, 1966 and SE 26, 1974

TABLE 4

Acres of Forest Tree Planting in S. C. and N. C. by Counties
Within 100-mile Radius of Location on Great Pee Dee River, Cheraw-Society Hill Area
S. C. 1929-72, N. C. 1927-69

County	Acres Planted
Berkeley	52,080
Calhoun	16,551
Chester	36,041
Chesterfield	90,433
Clarendon	27,638
Darlington	17,616
Dillon	10,637
Fairfield	34,913
Florence	10,631
Georgetown	44,769
Horry	37,061
Kershaw	124,035
Lancaster	35,284
Lee	15,239
Lexington	41,613
Marion	13,914
Marlboro	29,677
Orangeburg	56,241
Richland	42,462
Sumter	45,146
Williamsburg	29,314
York	37,652
Total - South Carolina	848,920
Anson	25,369
Bladen	26,356
Brunswick	23,496
Cabarrus	9,023
Chatham	7,497
Columbus	22,860
Cumberland	23,788
Davidson	5,713
Gaston	8,376
Harnett	8,684
Hoke	8,678
Johnston	4,323
Lee	3,095
Lincoln	6,272
Mecklenburg	11,331

County	Acres Planted
Montgomery	15,692
Moore	25,380
Pender	13,716
Randolph	7,550
Richmond	39,019
Robeson	5,563
Rowan	5,467
Sampson	13,636
Scotland	22,277
Stanly	4,365
Union	8,575
Wake	9,564
Total - North Carolina	365,665
Total Study Area	1,214,585

Data from - S. C. State Commission of Forestry and N. C. Forest Service

TABLE 5

Percent Area Burned for 100-Mile Radius of Location on Great Pee Dee River

Cheraw-Society Hill Area

5 Year Average 1965 - 1969 for N. C.

5 Year Average 1969 - 1973 for S. C.

State	Percent
South Carolina (22 County Area)	.27
North Carolina (27 County Area)	.65

Above data from respective state forestry agencies.

The North Carolina record includes two years of adverse weather causing extreme fire conditions resulting in large acreage burned.

TABLE 6

All Species of Pulpwood Harvested in S. C. and N. C. by Counties,
Within 100 Mile Radius of Location on Great Pee Dee River,
Cheraw - Society Hill Area
Average Annual Amount Harvested for 5 - Year Period
Calendar Years 1966 - 1972

County	Average Annual Five-Year Period (cords)
Berkeley	85,935
Calhoun	8,943
Chester	83,251
Chesterfield	83,114
Clarendon	56,976
Darlington	43,578
Dillon	22,401
Fairfield	155,409
Florence	39,030
Georgetown	129,439
Horry	81,852
Kershaw	120,014
Lancaster	53,145
Lee	19,851
Lexington	34,482
Marion	48,160
Marlboro	42,675
Orangeburg	46,887
Richland	64,085
Sumter	35,673
Williamsburg	75,408
York	61,831
Total - South Carolina	1,392,139
Anson	72,090
Bladen	60,747
Brunswick	88,034
Cabarrus	12,092
Chatham	48,055
Columbus	86,732
Cumberland	36,197
Davidson	14,789
Gaston	9,850
Harnett	16,959
Hoke	24,884
Johnston	16,027
Lee	17,731
Lincoln	9,743
Mecklenburg	19,923

County	Average Annual Five-Year Period (cords)
Montgomery	30,292
Moore	39,752
Pender	57,966
Randolph	28,300
Richmond	53,636
Robeson	41,760
Rowan	8,718
Sampson	59,145
Scotland	67,677
Stanly	17,340
Union	37,022
Wake	45,090
Total - North Carolina	1,020,551
Total Study Area	2,412,690

Data from Southern Pulpwood Production 1968-72

TABLE 7

Wood Residue Used for Pulp Manufacture for Entire State and Species Group
(In Thousand Cords)

State	1968			1972			Percent Increase
	All Species	Softwood	Hardwood	All Species	Softwood	Hardwood	
South Carolina	525.4	393.3	132.1	926.3	750.9	175.4	76.3%
North Carolina	665.9	528.0	137.9	1,074.6	861.3	213.3	61.4%
Total	1,191.3	901.3	270.0	2,000.9	1,612.2	388.7	67.9%

No Data Available by County

Data From Southern Pulpwood Production 1968 and 1972